

REMARKS

Consideration and allowance of the currently pending claims are now requested.

Claims 73-86 were pending prior to the instant amendment. By this amendment, claims 73, 77, 80 and 83 are amended, and new claims 87-134 are added to recite additional features of the present invention to which Applicants are entitled. Consequently, claims 73-134 are pending in the instant application.

The present invention is related to a semiconductor device including a monodomain region which contains no grain boundary.

In the parent of the instant CPA, claims 73-86 were rejected under 35 U.S.C. 102(a) as being unpatentable over Zhang et al., U.S. Patent 5,614,733, in view of Yamazaki, U.S. Patent 5,543,636. This rejection is traversed for the reasons advanced below.

The Examiner notes that Zhang teaches a thin film transistor including a crystallized channel region wherein there are no grain boundaries. In a former Office Action dated May 5, 1998, the Examiner indicated in column 4, lines 5-34 of Zhang '733 it is shown that no grain boundaries should exist in the channel region.

However, Zhang only teaches that barriers at grain boundaries which could not be removed if only thermal annealing is conducted can be lowered. In addition, even amorphous components remaining at the grain boundaries can be crystallized (column 4, lines 6-9). Actually, if an amorphous semiconductor film is annealed at 350-650°C for 1-24 hrs. (column 4, lines 2-4) and subsequently irradiated with a laser light or another light having an equivalent intensity thereto

(column 3, lines 60-67), there still remains grain boundaries in the semiconductor film. Fig. 7 of the present specification shows such the grain boundaries.

The claimed invention discloses forming an active layer or at least a channel forming region in the monodomain region, as shown in Figs. 2B and 4B. Accordingly, the active layer or the channel forming region contains no grain boundary and can be regarded as single crystalline. On the other hand, Zhang is unclear if the active layer or the channel forming region is formed in the monodomain region in accordance with the description on column 4, lines 5-34. Zhang's active layer or channel forming region should be formed among some monodomain regions and contain grain boundaries. Therefore, Applicants contend that the 103 rejection based on Zhang '733 should be withdrawn.

With respect to Yamazaki '636, Applicants would like to emphasize that the impurities such as carbon, nitrogen and oxygen prevent crystal growth, so that a monodomain can not be obtained with the impurities at the concentrations disclosed in Yamazaki '636.

Applicants have amended independent claims 73 and 80 to clarify the difference between the references and the claimed invention.

Claim 73 now includes a limitation of a spin density by ESR, which is shown in Fig. 5. Claim 80 recites a concentration of a point defect and a concentration of hydrogen or a halogen element to neutralize the point defect, described on page 4, line 35 through page 5, line 8. Although the monodomain region can be regarded as single crystalline, it includes point defects which is different from the single crystal.

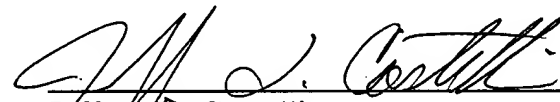
Furthermore, Applicants have added new claims 87-134. Dependent claims 92, 98, 104, 110, 116, 122, and 128 recite a grain size of the

monodomain region, which is disclosed on page 18, lines 16-20. Independent claims 123 and 129 include a limitation of S-value, as shown in Fig. 5.

These specific features such as spin density, a concentration of hydrogen or a halogen element, grain size, and S-value are not taught by Zhang '733. Accordingly, the claimed invention is different from the reference.

In view of the foregoing, it is respectfully requested that the rejections of record be reconsidered and withdrawn by the Examiner, that claims 73-134 be allowed, and that the application be passed to issue. If a conference would be of benefit in expediting the prosecution of the instant application, the Examiner is hereby invited to telephone counsel to arrange such a conference.

Respectfully submitted,



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